

We claim:

1. A method for providing a handback process in a wireless telecommunication system after an inter-MSC handoff from a first MSC to a second MSC during an active call to an MS, wherein the call is routed from the first MSC to the second MSC via an inter-MSC trunk as a result of the inter-MSC handoff, the method including the steps:

a) initiating an inter-MSC handback attempt from the second MSC to the first MSC in response to the MS moving into a geographic area associated with the first MSC;

b) setting up resources in the first MSC and a first BS associated with the first MSC for routing the call to the MS;

c) sending a command to the MS directing the MS to begin the inter-MSC handback attempt by attempting to communicate with the first BS;

d) receiving a message from the MS indicating that the inter-MSC handback attempt to the first BS failed;

e) cleaning up the resources set up in the first MSC and first BS for routing the call to the MS; and

f) sending a message to a second BS associated with the second MSC indicating that the first MSC and first BS are ready for another inter-MSC handback attempt.

2. The method as set forth in claim 1, further including:

g) initiating a next inter-MSC handback attempt by repeating steps a) through c);

h) receiving a message from the first BS indicating that the next inter-MSC handback attempt to the first BS was completed;

i) clearing the resources used in the second MSC and second BS for routing the call to the MS; and

j) tearing down the inter-MSC trunk used for routing the call from the first MSC to the second MSC.

3. The method as set forth in claim 1, step e) further including the step:
 - g) sending a message from the second MSC to the first MSC instructing the first MSC to clean up the resources set up in the first MSC and first BS for routing the call to the MS.
4. The method as set forth in claim 3, step e) further including the step:
 - h) sending a message from the first MSC to the second MSC informing the second MSC that the resources set up in the first MSC and first BS for routing the call to the MS are cleaned up.
5. The method as set forth in claim 4 wherein the message in step f) is sent to the second BS by the second MSC in response to the message received by the second MSC in step h).
6. The method as set forth in claim 3, step e) further including the step:
 - g) sending a message from the first MSC to the first BS instructing the first BS to clean up the resources set up in the first BS for routing the call to the MS.
7. The method as set forth in claim 5, step e) further including the step:
 - h) sending a message from the first BS to the first MSC informing the first MSC that the resources set up in the first BS for routing the call to the MS are cleaned up.
8. The method as set forth in claim 1 wherein the message in step f) is sent to the second BS from the second MSC.
9. A method for providing a handback process in a wireless telecommunication system after an inter-MSC handoff from a first MSC to a second MSC during an active call to an MS, wherein the call is routed from the first MSC to the second MSC via an inter-MSC trunk as a result of the inter-MSC handoff, the method including the steps:

- a) initiating a first inter-MSC handback attempt from the second MSC to the first MSC in response to the MS moving into a geographic area associated with the first MSC;
- b) setting up resources in the first MSC and a first BS associated with the first MSC for routing the call to the MS;
- c) sending a command to the MS directing the MS to begin the first inter-MSC handback attempt by attempting to communicate with the first BS;
- d) receiving a message from the MS indicating that the first inter-MSC handback attempt to the first BS failed;
- e) sending a message from the second MSC to the first MSC instructing the first MSC to clean up the resources set up in the first MSC and first BS for routing the call to the MS;
- f) cleaning up the resources set up in the first MSC for routing the call to the MS and sending a message from the first MSC to the first BS instructing the first BS to clean up the resources set up in the first BS for routing the call to the MS;
- g) cleaning up the resources set up in the first BS for routing the call to the MS and sending a message from the first BS to the first MSC informing the first MSC that the resources set up in the first BS for routing the call to the MS are cleaned up;
- h) sending a message from the first MSC to the second MSC informing the second MSC that the resources set up in the first MSC and first BS for routing the call to the MS are cleaned up;
- i) sending a message from the second MSC to a second BS associated with the second MSC indicating that the first MSC and first BS are ready for another inter-MSC handback attempt;
- j) initiating a second inter-MSC handback attempt by repeating steps a) through c);
- k) receiving a message from the first BS indicating that the second inter-MSC handback attempt to the first BS was completed;
- l) clearing the resources used in the second MSC and second BS for routing the call to the MS; and
- m) tearing down the inter-MSC trunk used for routing the call from the first MSC to the second MSC.

10. The method as set forth in claim 9, step a) further including the steps:
 - n) sending a message from the second BS to the second MSC requesting a handback attempt to the first BS; and
 - o) sending a message from the second MSC to the first MSC instructing the first MSC to set up resources in the first MSC and first BS for routing the call to the MS.
11. The method as set forth in claim 10, step b) further including the steps:
 - p) sending a message from the first MSC to the first BS instructing the first BS to set up resources in the first BS for routing the call to the MS;
 - q) sending a message from the first BS to the first MSC informing the first MSC that resources are set up in the first BS for routing the call to the MS; and
 - r) sending a message from the first MSC to the second MSC informing the second MSC that resources are set up in the first MSC and first BS for routing the call to the MS.
12. The method as set forth in claim 9, step c) further including the steps:
 - n) sending a command from the second MSC to the second BS directing the MS to begin the first handback attempt and instructing the second BS to relay the command to the MS; and
 - o) sending a command from the second BS to the MS directing the MS to begin the first handback attempt by attempting to communicate with the first BS
13. The method as set forth in claim 9, step d) further including the step:
 - n) receiving a message at the second BS from the MS indicating that the first handback attempt to the first BS failed; and
 - o) sending a message from the second BS to the second MSC indicating that the first handback attempt to the first BS failed.
14. The method as set forth in claim 9, step k) further including the step:

n) sending a message from the second BS to the second MSC indicating that the second handback attempt to the first BS was successful; and

o) sending a message from the first BS to the first MSC indicating that the second handback attempt was completed.

15. The method as set forth in claim 14, step l) further including the step:

p) sending a message from the first MSC to the second MSC instructing the second MSC to release the resources used in the second MSC and second BS for routing the call to the MS; and

q) sending a message from the second MSC to the second BS instructing the second BS to release the resources used in the second BS for routing the call to the MS.

16. A wireless telecommunication system providing a handback process after an inter-MSC handoff from a first MSC to a second MSC during an active call to an MS, wherein the call is routed from the first MSC to the second MSC via an inter-MSC trunk as a result of the inter-MSC handoff, the system including:

means for initiating an inter-MSC handback attempt from the second MSC to the first MSC in response to the MS moving into a geographic area associated with the first MSC;

means for setting up resources in the first MSC and a first BS associated with the first MSC for routing the call to the MS;

means for sending a command to the MS directing the MS to begin the inter-MSC handback attempt by attempting to communicate with the first BS;

means for receiving a message from the MS indicating that the inter-MSC handback attempt to the first BS failed;

means for cleaning up the resources set up in the first MSC and first BS for routing the call to the MS; and

means for sending a message to a second BS associated with the second MSC indicating that the first MSC and first BS are ready for another inter-MSC handback attempt.

17. The system as set forth in claim 16, further including:
- means for initiating a next inter-MSC handback attempt from the second BS to the first BS while the MS remains in the geographic area associated with the first MSC;
 - means for receiving a message from the first BS indicating that the next inter-MSC handback attempt to the first BS was completed;
 - means for clearing the resources used in the second MSC and second BS for routing the call to the MS; and
 - means for tearing down the inter-MSC trunk used for routing the call from the first MSC to the second MSC.
18. The system as set forth in claim 16, further including:
- means for sending a message from the second MSC to the first MSC instructing the first MSC to clean up the resources set up in the first MSC and first BS for routing the call to the MS.
19. The system as set forth in claim 18, further including:
- means for sending a message from the first MSC to the second MSC informing the second MSC that the resources set up in the first MSC and first BS for routing the call to the MS are cleaned up.
20. The system as set forth in claim 18, further including:
- means for sending a message from the first MSC to the first BS instructing the first BS to clean up the resources set up in the first BS for routing the call to the MS.